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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/695,414	10/25/2000	Hongyong Zhang	0765-2218	2545

7590

07/23/2002

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EXAMINER

PERT, EVAN T

ART UNIT

PAPER NUMBER

2829

DATE MAILED: 07/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/695,414

Applicant(s)

ZHANG ET AL.

Examiner

Evan T. Pert

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08/420,472.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 2, 5, 8, 11, 14 and 17 are objected to because "methal" in line 1 should read --metal--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (U.S. Patent 5,147,826) in view of Turner et al. (U.S. Patent 5,512,320), each of record.

Liu et al. teach "a method of making a semiconductor device" [col. 1, line 14] comprising:

"forming a semiconductor film comprising amorphous silicon on an insulating surface" [Examples 1 and 2];

"forming a crystallization promoting material comprising a metal in contact with a selected portion of said amorphous semiconductor film using a vapor of a gas of said metal" wherein the "thermal evaporation" to create the "vapor" *inherently* utilizes "a chamber" [Example 2]; and

"crystallizing said semiconductor film in contact with said crystallization promoting material" using "heat" [abstract].

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Regarding claims 2, 5, 8, 11, 14 and 17, Liu et al. teach that the "metal" is one of "Pd" and "Ni" [Example 2].

Regarding claims 3, 6, 9, 12, 15 and 18, Lie et al. teach their method can include "patterning the crystallized semiconductor film to form an active layer of a thin film transistor (TFT)" [col. 1 taken with col. 4, lines 29-34].

Liu et al. do not specifically teach that "the step of crystallizing the semiconductor film should be carried out successively after the formation of said crystallization promoting material without exposing the semiconductor film and crystallization promoting material to the air outside the chamber." Actually, Liu et al. do not teach anything about the *specifics of the chambers* used for their methodology, and clearly rely on the knowledge notoriously well known to one of ordinary skill in the art to determine what type of *vacuum processing apparatus* should be used for depositing the sequential thin films of amorphous silicon and palladium or nickel as part of their invention.

While Liu et al. are silent about the *specifics of vacuum chambers*, Turner et al. are not: Turner et al. teach a "vacuum processing apparatus having *improved throughput*" which is a better chamber system than an ordinary chamber for depositing sequential thin films such as the "amorphous silicon" and "palladium or nickel." In fact, Turner et al.'s apparatus is *highly applicable* since it is specifically directed at *depositing sequential thin films on glass substrates with improved throughput* [see Example 2 of Liu et al. for example].

Turner et al. explain, as background, what is notoriously well known today as a "cluster tool", having an enclosed vacuum environment for "multiple step processes" performed "without removing the substrate from a vacuum environment." Turner et al. also explain that such a cluster tool vacuum system "has the concomitant advantage of a cleaner system." [Col. 1, 44-52]

If one were to adopt Turner et al.'s chamber for performing the depositions of amorphous silicon and nickel in the invention of Liu et al., one would *inherently* "successively form the crystallization promoting metal film after forming the amorphous silicon film without exposing to air outside the chamber" because the concept of "without removing the substrate from a vacuum environment" is *equivalent* to "without exposing the formed films on a substrate to air outside the chamber."

It clearly would have been obvious at the time of applicant's claimed invention to adopt the chamber taught by Turner et al. for practicing the invention taught by Liu et al.. One of ordinary skill in the art would have been motivated, *for example*, by the obvious benefits of "increased throughput" and "cleaner system" taught by Turner et al. [abstract in view of column 1].

Response to Arguments

3. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground of rejection.

4. Notably, applicant's disclosure states that "it is desired that a multichamber system...is used...so that further throughput can be improved" [page 12, lines 25-27], which is exactly the same reasoning for adopting the chamber of Turner et al. [title].

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5. Contrary to applicant's arguments, there is motivation in Turner et al. to utilize their chamber for practicing the invention of Liu et al. [title, abstract, background].

6. Contrary to applicant's arguments, the Turner et al. apparatus *does* relate to the Liu et al. process since the Turner et al. apparatus is ideal for "depositing sequential thin films on glass substrates" just as is required by the process of Liu et al..

7. Contrary to applicant's arguments, there *is* and *was* a reasonable expectation of success since Turner et al. obviously teaches an apparatus useful to mass produce the glass substrate panels taught in the process of Liu et al., for display products.

8. The examiner emphasizes that Turner et al. are *not* silent about "not exposing to air" because the limitation "without removing the substrate from a vacuum environment" [col. 1, lines 50-51] is *inherently equivalent* to "without exposing the substrate, including any films on the substrate, to air outside the vacuum apparatus chamber."

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evan T. Pert whose telephone number is 703-306-5689. The examiner can normally be reached on M-F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 703-308-1680. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ETP
July 22, 2002



EVAN PERT
PATENT EXAMINER